

S23 - PRECISE COINCIDENCE OF MASS EXTINCTION AND VOLCANISM IN THE MIDDLE PERMIAN OF CHINA: MICROFOSSIL AND CARBON ISOTOPE RECORDS FROM THE EMEISHAN LIP

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The relationship between volcanism and extinction is of great importance to the Earth Sciences. The Emeishan Large Igneous Province of southwest China offers a unique opportunity to directly examine this relationship, because limestones recording the detailed events of the Middle Permian mass extinction are interbedded with mafic volcanoclastics and basalts. Key sections in the region show that the onset of volcanism was marked by both large phreatomagmatic eruptions and heavy losses amongst fusulinacean foraminifers and calcareous algae. The temporal coincidence of these two phenomena supports the idea of a cause-and-effect link, and provides a potent causal mechanism for the Middle Permian mass extinction. New conodont dating of these sections indicates that losses occurred in the mid-Capitanian, placing the Guadalupian extinction well within that stage, much earlier than most previous estimates. The crisis predates the onset of a major negative carbon isotope excursion (seen to be of wide extent) that points to subsequent severe disturbance of the ocean-atmosphere carbon cycle.

S3 - JURASSIC PALYNOSTRATIGRAPHY OF THE SAGRES REGION (ALGARVE BASIN) AND THE CARRAPATEIRA OUTLIER: PRELIMINARY RESULTS

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The Algarve Basin (AB) corresponds to the southernmost geological province of mainland Portugal. More than 3000m of essentially marine sediments accumulated during Mesozoic-Cenozoic times in the AB. The Sagres region is the reference area for the Mesozoic fill of the Western sub-basin where Jurassic strata outcrops in the cliffs at Armação Nova, Mareta and Cilheta beaches. The Carrapateira Outlier (CO) is located 20km north of the main AB and consists of Upper Triassic to Kimmeridgian sediments. The palynostratigraphical study of the Jurassic successions in the Sagres region and the CO has yielded new biostratigraphical data based on dinoflagellate cysts and miospores biostratigraphy. The samples collected from Lower Jurassic (Armação Nova) proved extremely sparse palynologically, due probably to the intensely dolomitised nature of this carbonate succession. The organic residues from Middle and Upper Jurassic are abundant and comprise well-preserved dinoflagellate cysts. The dinoflagellate cyst from the lower part of the Mareta succession are indicative of the Batonian stage; the uppermost strata of this succession match to the Cilheta outcrop and contain species indicative of the Callovian Stage. The dinoflagellate cysts from the Callovian, from further north in Europe, are normally significantly more diverse, maybe due to the relatively enclosed basin and/or preservational factors in southern Portugal. The dinoflagellate cyst associations from the CO are indicative of an Oxfordian age. These results confirm, and refine, the existing macrofaunal age of these successions. However, the palynostratigraphical research in the AB and CO is currently still in progress.